

Fish Chain Traceability and The Tracefish standards

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Jostein Storøy, Research Director

Department of Aquaculture Technology

SINTEF Fisheries and Aquaculture Ltd

This presentation

- Traceability, focus on Chain Traceability
- Why Traceability is important...
- Tracefish-standards
- Future work and opportunities

Definition of traceability - ISO 8402

Traceability:

Ability to trace the history, application or location of an entity by means of recorded identifications.

In a product sense, it may relate to

- the origin of materials and parts
- product properties
- the product processing history
- the distribution and location of the product after delivery

Types of traceability

→ Internal traceability

Your own data

→ Chain traceability

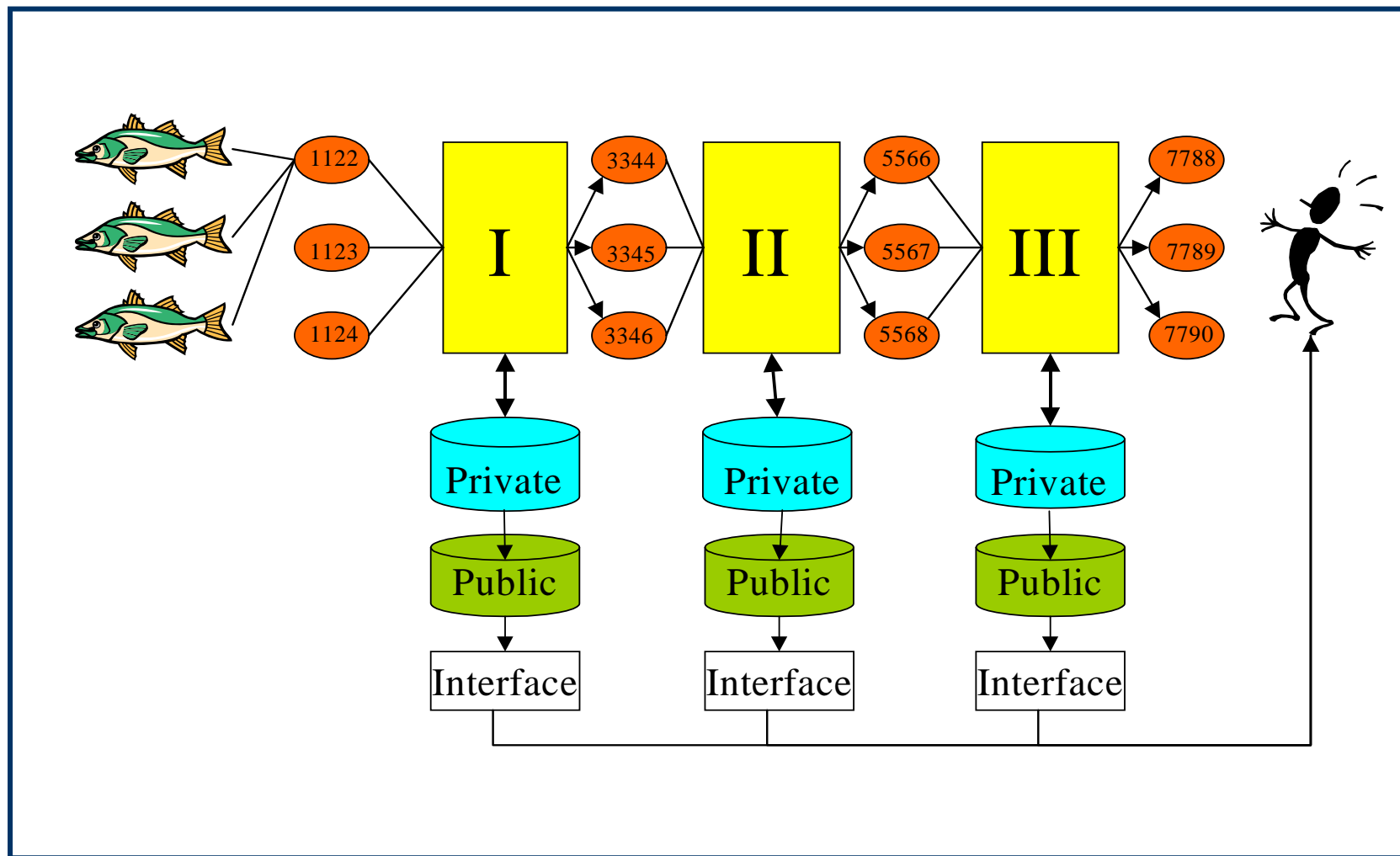
Your own data + The data you get (and give)

→ Traceability control mechanisms

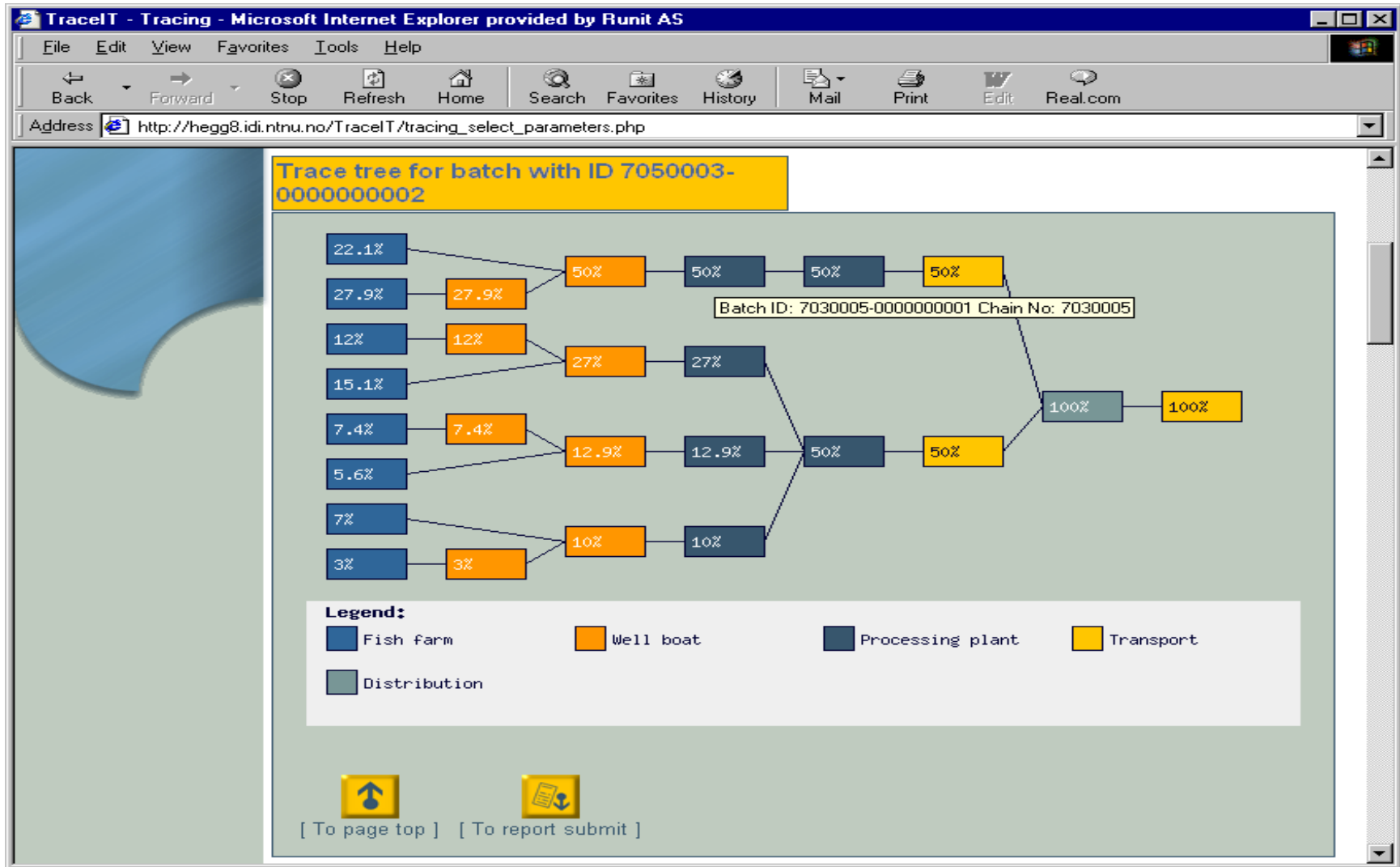
→ Methods and instruments used for authentication and testing that what we receive is what the documentation says.

“Pull based” Chain Traceability

(Petter Olsen model)



A Trace Tree - split and merge



Triggers for food traceability systems

- Large food scandals
- Numerous expensive 'almost-accidents' where the contamination was discovered earlier so quiet 'withdrawal' (rather than public recall) was effected
- Extensive customer product specifications (mainly supermarkets)
- New EU- and US-law
- Non governmental organizations (NGOs)
- Consumer awareness and demands
- Economic - reduced transaction costs, integration in the supply chain

Recent Food scandals

- Dioxin in Belgian chicken
- E.coli 0157:H7 in Hudson Foods Company beef
- Mad cow disease
- Foot and mouth disease
- Scrapie
- Several serious salmonella outbreaks

The Belgian dioxin scandal 1999

- Motor oil delivered to a recycling plant ends up in a vegetable oil storage tank, and goes into fat production
- Oil contained 1 g dioxin
- Fat goes into chicken feed production
- Chickens sickness and reduced egg quality noticed
- Since IDs of raw materials and ingredients (feed) not attached to production batches - contamination not possible to isolate. Hence targeted recall not possible
- Everybody not able to document dioxin free feed, chicken and eggs had to recall all their products from market
- Effect - The whole Belgian feed industry had to close down
- Cost - 1.3 billion USD

The Hudson Foods case

- 16 persons sick from eating Hudson beef patties
- E.coli 0157:H7 bacteria identified as contaminant
- A particular slaughterhouse identified as source
- Hudson used leftover raw material from one day to another
- Could not determine if parts of contaminated beef had found their way into later production
- Bad record keeping led to recall of enormous amounts of meat, and bankruptcy, even though only one of their plants were involved

Conclusion

- Keeping track of production date and batch identifier doesn't help if the producer can not relate the production batch to input batches.
- The production batch must be of limited size, it must be related to a finite set of input batches, and this relation (“transformation”) must be explicitly documented.

Legislation - 1

EC 104/2000 and EC 2065/2001

“EU regulation on the common organisation of fishery markets”, January 2002 (in effect now)

- **Must specify:** species, production method (sea, inland, farmed) and area of origin
- **Applies to:** living, fresh, dried, salted, in brine, smoked and cooked fish, sold separately or prepackaged; also shellfish
- **Does not apply to:** canned fish, secondary processed fish, small quantities sold directly from fisherman to consumer

Legislation - 2 and 3

“Product Safety Directive”, January 2003 (proposal)

- **Requires:** producer must have documented routines for recall, risk analysis and unique identification
- **Applies to:** all products to consumer

92/59/EC

“Hygiene of Foodstuffs Directive”, 2004 (proposal)

- **Requires:** documented traceability for all links in the food chain (very likely ‘one-up, one-down’)
- **Applies to:** all producers of foodstuffs

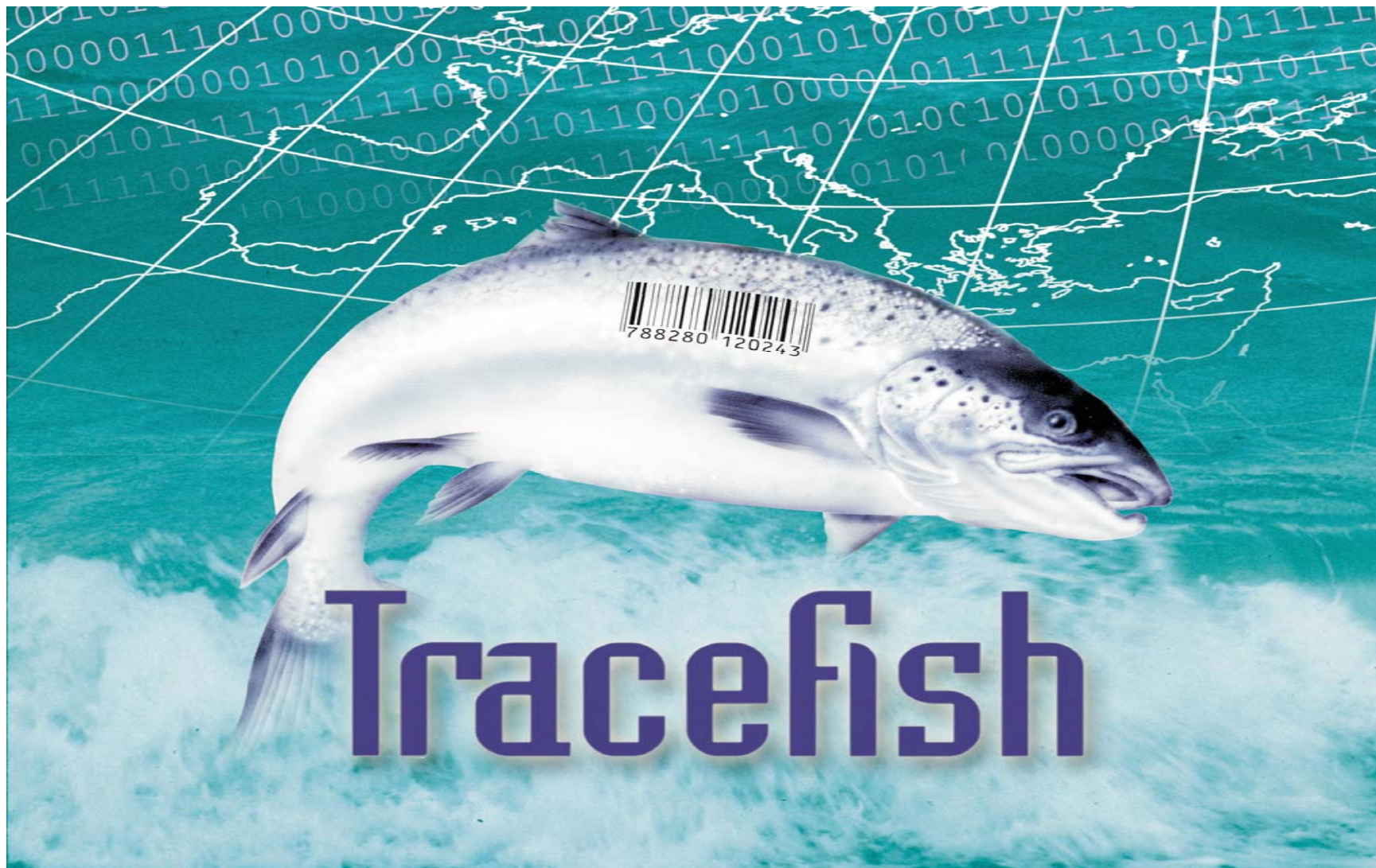
93/43/EC

- Traceability of ingredients and additives (2005)

New US Law - Country of origin labeling

- From Sept 2004 retailers must label groceries with Country of origin
- Complex rules (must tell consumers where and how):
 - Country of harvest
 - Country of processing
- All links in supply chain will be affected
- Retailers will push requirements down the supply chain to secure that documentation is in place
- This will demand extensive record keeping and tracking systems
- *Source: Council Richard E. Gutting J.R., Reed Smith*

The Tracefish project - 2001-2002



TRACEFISH - conferences/workshops

1. “State of the art”, with Nordic project, Copenhagen, May 2001
2. “Data content”, with CA-FQLM, Nantes, Sept. 2001
3. “Technical”, Amsterdam, March 2002
4. “Standards and implementation projects based on them”. Consensus conference and final Work Shop, **Nov. 2002, Torremolinos, Spain**

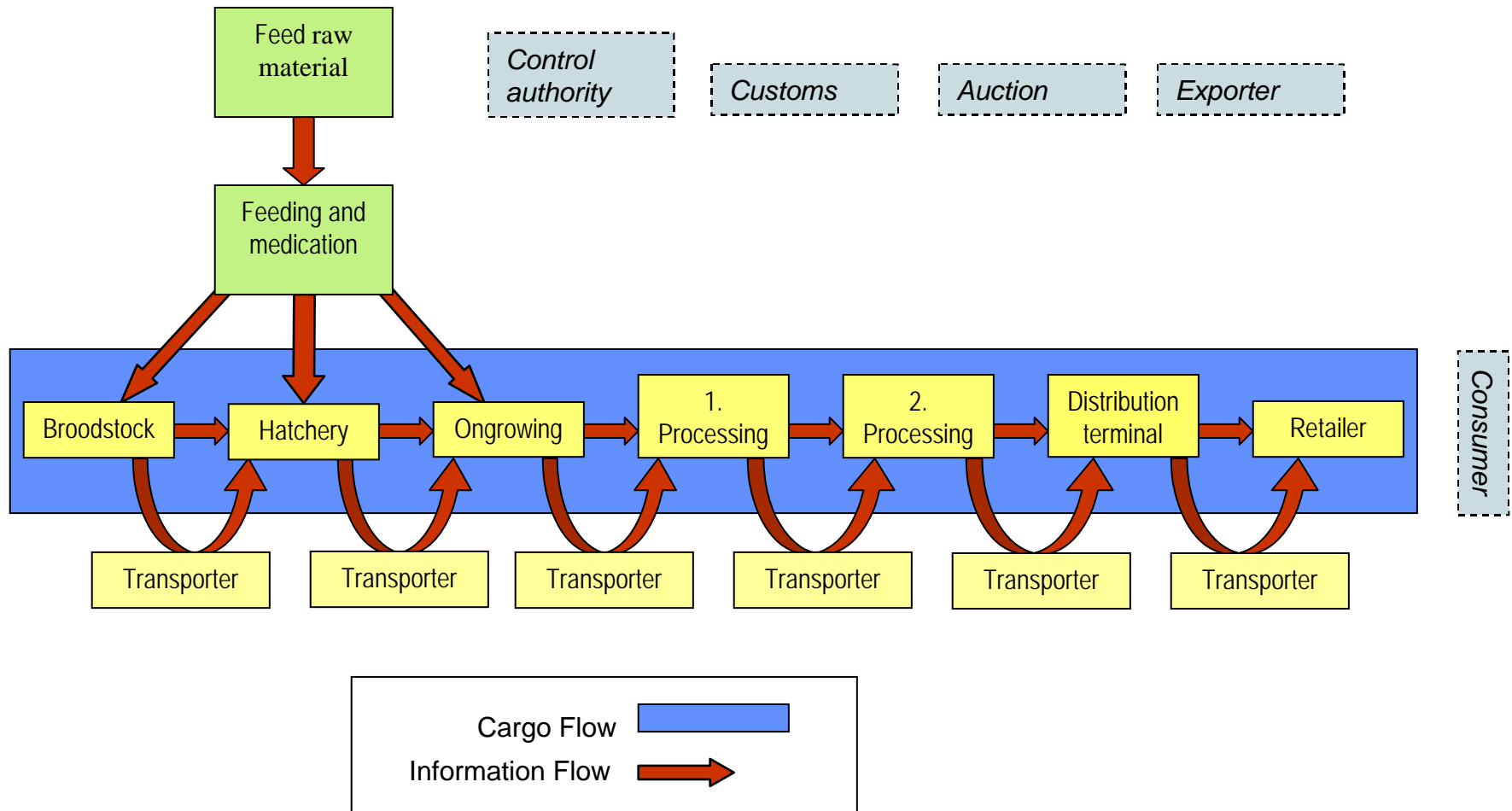
See www.tracefish.org

TRACEFISH - standards

The CEN (WA) standards describes:

- for full-chain traceability, what data to be recorded, how and where in the captured fish chain.
- for full-chain traceability, what data to be recorded how and where in the farmed fish chain.
- how to code, transmit or to make these data available in electronic form, (XML format)
- The “fish standards” establish a global language/vocabulary for fish chain traceability

Farmed Fish Chain Model



Grouping of data elements

■ Shall

- Fundamental traceability data elements

■ Should

- Not fundamental traceability
- Other legal requirements
- Food safety
- Product properties
- Production and processes

■ May

- Ethics and sustainability
- Trade and logistics

Farmed fish standard

Table 3 — Detailed information requirements for fish farms

Data element		Description	Examples	Categorisation		
				Shall	Should	May
FISH FARMS						
FFF01	Food business ID	Name and address or GLN (n3+n13) of food business that operates fish farm establishment	Fjord Harvest Ltd 67345 Bergen Norway	x		
FFF02	Fish farm establishment ID	Name, address and registration number or GLN (n3+n13) of fish farm establishment	Fjord Harvest Ocean site 2 67345 Bergen Norway NTFS0003 NO	x		
FFF03	Fish farm GMP certification	Names of fish quality or food safety GMP schemes by which fish farm is certified	Debio			x
FOR EACH UNIT RECEIVED						
Identities						
FFF04	Unit ID	SSCC (n2+n18) (if received as a logistic unit) or GTIN+ (n2+n14+AI's) (if received as a separate trade unit)	GTIN+: (01) 07012345000001 (10) 0000000125	x		
FFF05	Trade unit IDs	If received as a logistic unit, the IDs of the trade units within the logistic unit. List of GTIN+ (n2+n14+AI's)	List of GTIN+	x		
Source						
FFF06	Previous Food Business ID	Name, address or GLN (n3+n13) of previous food business from whom the unit was received. (Hatchery or transporter, etc.).	Salmogen Breeding station 1 1234 Trondheim Norway	x		
FFF07	Date and time of reception		2002-09-28T12:00	x		
Control checks (either on logistic or separate trade units)						
FFF08	Temperature check	Temperature °C i.e. in received unit	4,0 °C		x	

Data element		Description	Examples	Categorisation		
				Shall	Should	May
FFF09	Temperature record	If recording device is affixed to <u>batch</u> , temperature/time record from creation of unit onward.	(°C) / date and time points			x
FFF10	Quality control checks	Type of checks + measured results or indication if records are available in electronic form, on paper or not <u>available</u>	Paper			x
Transformation Information						
FFF11	Related created trade unit IDs	List of ID's of our created trade units that may incorporate part of this received trade unit.	GTIN+ GTIN+	x		
FFF12	Fractions	Fraction (%'s, kilos) of the received trade unit that go into each created unit	GTIN+ 50%, 1000 kg GTIN+ 50%, 1000 kg		x	
FOR EACH NEW TRADE UNIT CREATED BY FISH FARM						
Identity						
FFF13	Unit ID	GTIN+ (n2+n14+AI's)	(01) 07012345000001 (10) 0000000125	x		
Description						
FFF15	Location of fish farm	Longitude + latitude or other appropriate specification.			x	
FFF40	Size (grade) distribution	Weight per size grade (1-2, 2-3, 3-4, etc) in kg	1-2 kg 200 kg 2-3 kg 500 kg 3-4 kg 250 kg		x	
FFF16	Condition factor	<u>Mathematic</u> formula: $100 \times (\text{weight (g)} / \text{length}^3 (\text{cm}))$.	1,2			x
FFF17	Fat content	Measure of fat content in flesh.	14 %			x
FFF18	<u>Color</u>	Estimate or <u>count of pigmentation of flesh</u> according to i.e. the <u>Roche</u> scale.	16			x
FFF19	Texture	Flesh texture (measured in Newton)				x
FFF20	Net weight	Net weight of created unit (kg)	7.000 kg			x
FFF25	Average weight	Count of average weight of fish in created trade unit.	4,5 kg			x
FFF28	Total weight per quality grade		1000 kg Superior 30 kg Ordinary 5 kg Production			x
Production history						
FFF14	Farm unit ID	Internal number of rearing unit (cage).	15		x	
FFF29	Starving period	Number of days with no feeding before transport	10 days		x	
FFF23	Temperature record	Temperature/time log of the product holding area (cage) for the period between reception and <u>dispatch</u>	(°C) / date and time points		x	
FFF22	Fish density record	Fish density in created trade unit (kg/m3)	24 kg/m3			x

Data element		Description	Examples	Categorisation		
				Shall	Should	May
FFF30	Disease record	Records of names and period of diseases, or indication if records are available in electronic form, on paper or not available	Paper		x	
FFF38	Treatment record	Medicine, vaccine or chemical names and period of use or indication if records are available in electronic form, on paper or not available.	Slice, 2002-10-01 – 2002-10-01			x
Transformation information						
FFF31	Related received trade unit IDs	List of ID's of our received trade units that make up this created trade unit	GTIN+ GTIN+	x		
FFF32	Fractions	Fraction (%'s + kilos) of the created unit that was made up by each received trade unit	GTIN+ 50% 5000 kg GTIN+ 50% 5000 kg		x	
FOR EACH LOGISTIC UNIT CREATED						
Identities						
FFF33	Unit ID	SSCC (n2+n18)	(00) 235467985462312345	x		
FFF34	Trade unit IDs	The IDs of the trade units within the logistic unit	List of GTIN+	x		
FOR EACH UNIT DISPATCHED (either as a logistic unit or a separate trade unit)						
Identity						
FFF35	Unit ID	SSCC (n2+n18) (if dispatched as a logistic unit) or GTIN+ (n2+n14+AI's) (if dispatched as a separate trade unit)	GTIN+: (01) 07012345000001 (10) 0000000125	x		
Destination						
FFF36	Next Food Business ID	Name and address or GLN (n3+n13) of the food business to whom the unit is dispatched (transporter or processor, etc.)	Cargonor 7890 Flørø Norway SF 123	x		
FFF37	Date and time of dispatch	Date and time of transfer to next food business	2002-09-25T10:30	x		

Tracefish standards - specifies;

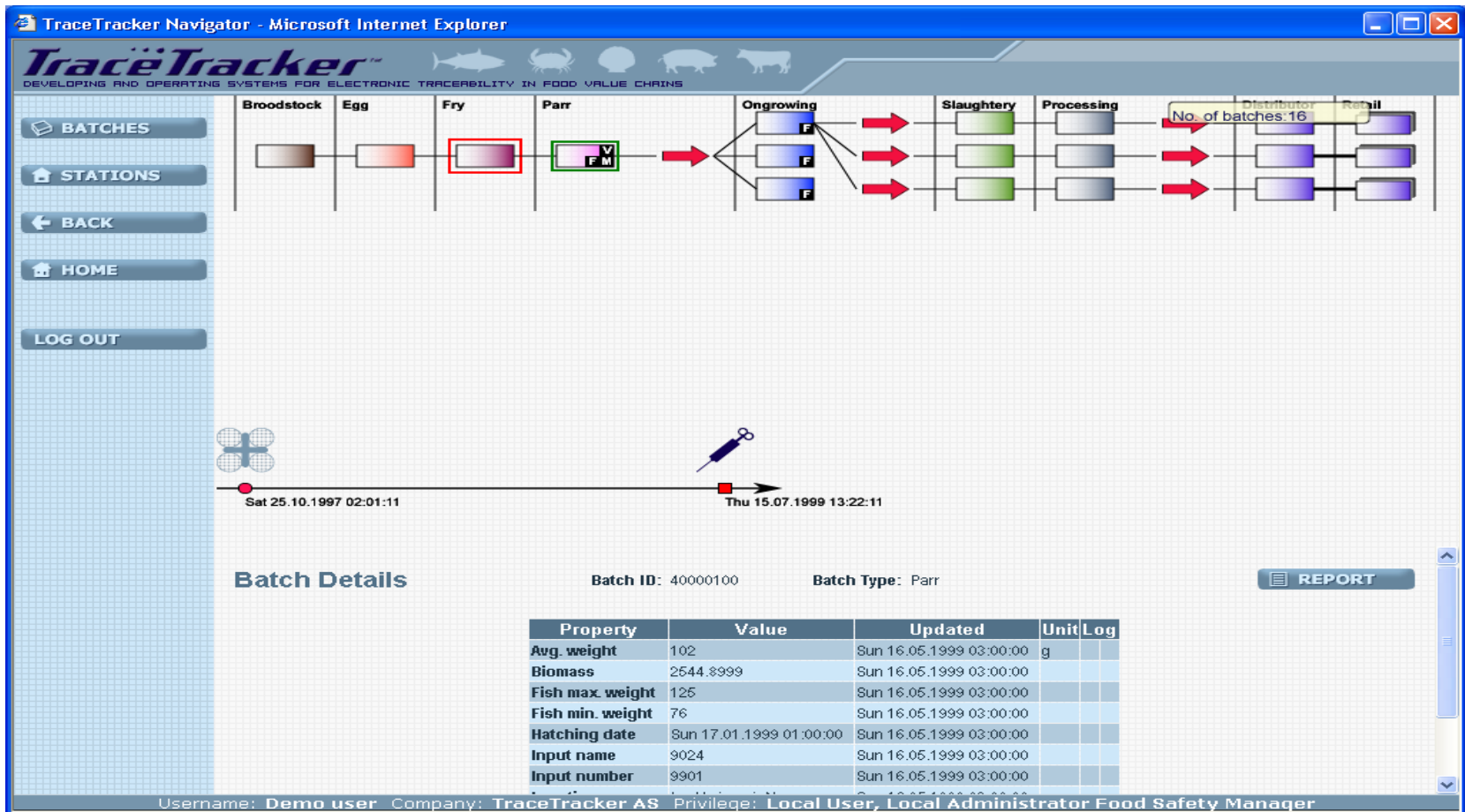
- What data shall be recorded, and how, at each link in the fish chain
- Data recorded in a firm shall be linked to the 3 stages;
 - What you receive (inbound material flow)
 - What you produce
 - What you dispatch (outbound material flow)
- A standard way to identify units/batches (EAN/UCC)
- A standard method for keeping track of splitting and merging of units/batches, thus input batches are linked to production batches in a documented manner

Benefits from Tracefish standards

- Fishing industry know what to register
- Easier for ICT companies to install traceability software
- Easier to communicate in the fish value chain and reduced costs in connection with information logistics, less re-punching
- Possible to trace back to source of error, surgical recall if something goes wrong
- More information gives better opportunity to find out how different properties influence quality and yield; optimising production
- Access to new value adding data, i.e. documentation of unbroken cooling chain and better estimation of remaining shelf life

Solution providers - TraceTracker Ltd

- Commercial company developing and selling software for full chain traceability operation and management



Further work

- Implementation and testing in case chains
- Especially work with data capture technology (sensor technology, RFID tags, etc) and integration with software systems
- Cooperation with auditing companies
- Evaluation and revision of standards
- Lift standards to a higher level (i.e. ISO)
- Use Tracefish standards as a framework for standardization of all information in fish business and management (i.e. nutrition, ethics, sustainability,)

Thank You !